

## Surds & Indices Exam Questions

- 1 Express as a single power of  $a$

$$\frac{a^2}{\sqrt{a}}$$

where  $a \neq 0$

Circle your answer.

[1 mark]

$$a^1$$

$$a^{\frac{3}{2}}$$

$$a^{\frac{5}{2}}$$

$$a^4$$

- 1 Simplify  $\frac{(a^4b)^{\frac{5}{2}}}{(a^3b^{\frac{1}{2}})^{-3}}$

Circle your answer.

[1 mark]

$$a^{19}b$$

$$ab^4$$

$$ab$$

$$a^{19}b^4$$

- 1 Identify the expression below that is equivalent to  $e^{\frac{-2}{5}}$

Circle your answer.

[1 mark]

$$\frac{1}{\sqrt[5]{e^2}}$$

$$-\sqrt{e^5}$$

$$-\sqrt[5]{e^2}$$

$$\frac{1}{\sqrt{e^5}}$$

- 2 Identify the expression below which is equivalent to  $\left(\frac{2x}{5}\right)^{-3}$

Circle your answer.

[1 mark]

$$\frac{8x^3}{125}$$

$$\frac{125x^3}{8}$$

$$\frac{125}{8x^3}$$

$$\frac{8}{125x^3}$$

**3 (a)** Write down the value of  $p$  and the value of  $q$  given that:

**3 (a) (i)**  $\sqrt{3} = 3^p$

[1 mark]

**3 (a) (ii)**  $\frac{1}{9} = 3^q$

[1 mark]

**3 (b)** Find the value of  $x$  for which  $\sqrt{3} \times 3^x = \frac{1}{9}$

[2 marks]

**4** Show that  $\frac{\sqrt{6}}{\sqrt{3} - \sqrt{2}}$  can be expressed in the form  $m\sqrt{n} + n\sqrt{m}$ , where  $m$  and  $n$  are integers.

Fully justify your answer.

[4 marks]